WM-F2015

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model

REVISED

Discard WM-F2015 Service Manual
(No. 9-955-731-11) previously issued.
This Service Manual contains it.

This set is almost the same as model WM-AF23/BF23 previously produced.

Therefore, see the service manual for the information which is not contained in this service manual.

• PARTS LIST (The difference between WM-AF23/BF23 and WM-F2015).

WM-AF23/BF23			WM-F2015	
Page	No.	Part No.	Part No.	Description
	10	3-346-513-01	3-346-513-01	(EXCEPT UK).....BUTTON (FF)
			3-346-513-11	(UK) .....BUTTON (FF)
	11	3-346-514-01	3-346-514-01	(EXCEPT UK).....BUTTON (REW)
			3-346-514-11	(UK) .....BUTTON (REW)
	12	3-346-515-01	3-346-515-01	(EXCEPT UK).....BUTTON (STOP)
			3-346-515-11	(UK) .....BUTTON (STOP)
	13	3-346-512-01	3-346-512-01	(EXCEPT UK).....BUTTON (PLAY)
			3-346-512-11	(UK) .....BUTTON (PLAY)
11	21	3-351-501-01	3-352-733-01	(US, Canadian) .....CABINET, FRONT
			3-352-733-11	(EXCEPT US, Canadian)....CABINET, FRONT
	22	3-346-517-01	3-346-517-01	LID, BATTERY CASE (BLACK)
		3-346-517-71	3-346-517-71	LID, BATTERY CASE (BLUE)
		3-346-517-61	3-357-436-01	LID, BATTERY CASE (RED)
		———	3-357-436-11	LID, BATTERY CASE (GRAY)
	※A	3-351-503-01	3-351-503-01	CABINET REAR (CF-C) (BLACK)
		3-351-503-21	3-351-503-21	CABINET REAR (CF-C) (BLUE)
		3-351-503-11	3-351-503-51	CABINET REAR (CF-C) (RED)
		———	3-351-503-61	CABINET REAR (CF-C) (GRAY)

— contiuned on page 2 —

NOTE:

- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- G : Germany model
  IT : Italian model
  AUS : Australian model
  BR : Brazilian model
- ※A: WM-AF23 US model: 31
  EXCEPT WM-AF23 US model: 35

CASSETTE PLAYER

SONY®

WM-AF23/BF23 Page No.	WM-AF23/BF23 Part No.	WM-F2015 Part No.	WM-F2015 Description
11	※B X-3346-702-1	X-3347-153-1	(US, Canadian).....HOLDER ASSY, CASSETTE (BLACK)
		X-3347-196-1	(Canadian).....HOLDER ASSY, CASSETTE (GRAY)
	X-3346-717-1	X-3347-164-1	(G, IT) .....HOLDER ASSY, CASSETTE (RED)
	X-3346-718-1	X-3347-165-1	(G, IT) .....HOLDER ASSY, CASSETTE (BLUE)
		X-3347-166-1	(G, IT) .....HOLDER ASSY, CASSETTE (GRAY)
	X-3346-716-1	X-3347-167-1	(G, IT) .....HOLDER ASSY, CASSETTE (BLACK)
	X-3346-711-1	X-3347-168-1	(AEP, UK, E, AUS, BR)...HOLDER ASSY, CASSETTE (BLACK)
	X-3346-712-1	X-3347-169-1	(AEP, UK, E, BR).....HOLDER ASSY, CASSETTE (RED)
	X-3346-713-1	X-3347-170-1	(AEP, UK, E, BR).....HOLDER ASSY, CASSETTE (BLUE)
		X-3347-171-1	(AEP, UK, E, BR).....HOLDER ASSY, CASSETTE (GRAY)
14			ACCESSORY & PACKING MATERIAL
		3-351-508-01	TUBE, PROTECTION
		*3-352-456-01	(EXCEPT US) .....CUSHION (LOWER)
		*3-357-431-01	(EXCEPT US) .....CUSHION (UPPER)
		*3-357-433-01	(US) .....CUSHION (UPPER)
		3-751-403-11	(Canadian, AEP, UK, IT, BR) ....MANUAL, INSTRUCTION
		3-751-403-21	(US) .....MANUAL, INSTRUCTION
		3-751-403-41	(G, BR) .....MANUAL, INSTRUCTION
		3-751-403-71	(E, AUS).....MANUAL, INSTRUCTION
		*3-357-422-01	(E) ..... INDIVIDUAL CARTON
		*3-357-423-01	(EXCEPT US, E)..... INDIVIDUAL CARTON
		8-952-350-90	(E) .....EARPHONE MDR-E454 SET
		8-952-447-90	(EXCEPT E).....EARPHONE MDR-006L SET

NOTE:

- ※B: WM-AF23 US model: 37
  EXCEPT WM-AF23 US model: 36

9-955-731-12

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General Audio Group

English
91D0499-1
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© 1991. 4

Published by Customer Relations and Service Group

WM-AF23/AF29/BF23

SERVICE MANUAL

Canadian Model
WM-AF23

AEP Model
UK Model
E Model
WM-BF23

US Model
Canadian Model
WM-AF29

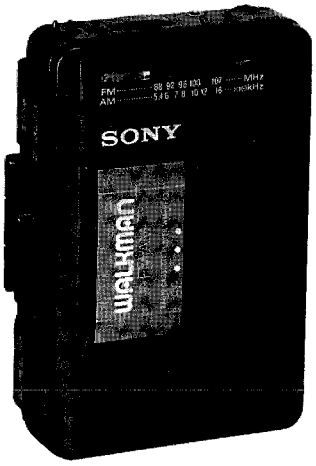


Photo: WM-BF23

Model Name Using Similar Mechanism	WM-AF22/BF22
Tape Transport Mechanism Type	MF-WMAF23-04
	MF-WMBF23-04

SPECIFICATIONS

Radio
FM: 87.6—108 MHz (US, Canada), 87.6—107 MHz (W. Germany), 87.5—108 MHz (Italy), 87.6—107.9 MHz (Others)
AM: 530—1,710 kHz (US, Canada), 526.5—1,606.5 kHz (Italy), 531—1,602 kHz (Others)

Power requirements
3 V DC Batteries R6(AA) × 2
BP-700 rechargeable battery
External DC 3 V power sources

Battery life
(Approximate hours)

	Playback	FM
Sony Alkaline AM3 (N)	8 hrs.	30 hrs.
Rechargeable BP-700	2 hrs.	6 hrs.

Accessories supplied
Stereo headphones (open-air type, 1) Beltclip (1) Battery tube (1)
Only for WM-AF29: Rechargeable battery (1), Battery charger (1)

Optional accessories
Rechargeable battery (BP-700)/charger (BC-700) kit BPC-700K*
AC power adaptor AC-D2L
Car battery cord DCC-70
Battery case EBP-500B
Stereo active speaker system SRS-30, SRS-50

Design and specifications subject to change without notice.

Note
This appliance conforms with EEC Directives 76/889 and 82/499 regarding interference suppression.

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol ⧈ are trademarks of Dolby Laboratories Licensing Corporation.

MICROFILM

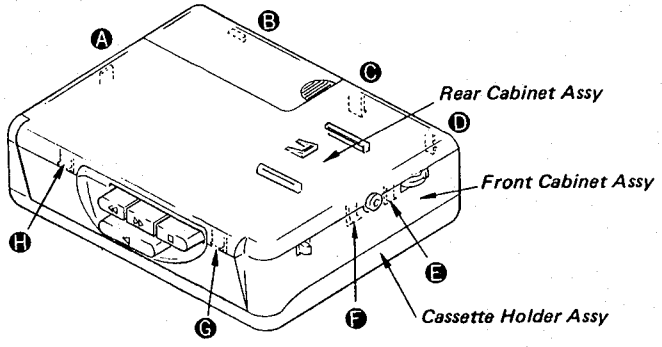
RADIO CASSETTE PLAYER

SONY®

SECTION 1
DISASSEMBLY

Location and shape of claws

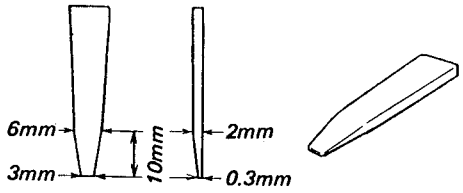
The symbols (Ⓐ – Ⓗ) show the order to uncouple the linkage of the claw, and names of the parts.



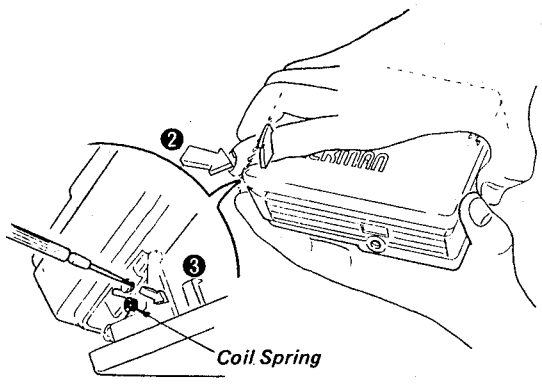
Note: Follow the disassembly procedure the numerical order given.

Tools: Precision Screwdrivers (⊖ , width 0.8mm, 1.4mm, and 2.0mm)
Adhesive tape 1–2cm
Wedge (hand made)

Material . . . soft plastic (such as PVC) etc.
Sizes are for the reference.



[1] Cassette Holder Removal

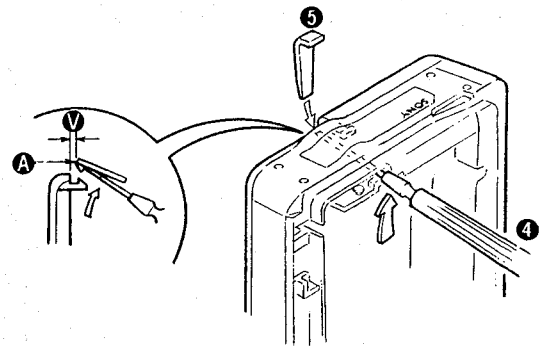


❶ Open the cassette holder.

❷ While pressing the edge of the cassette holder, pull up it in order to take off the cassette holder.

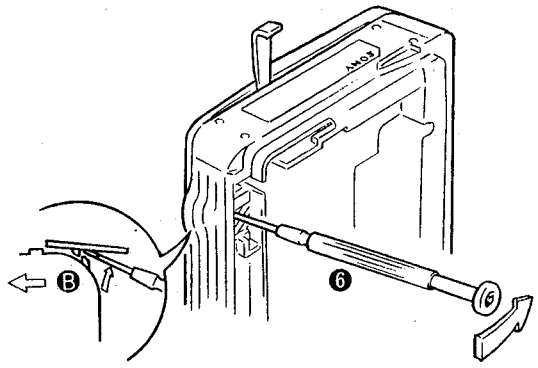
❸ Take off the end of coil spring with a precision screwdriver (width: 0.8mm).

[2] Rear Cabinet Removal

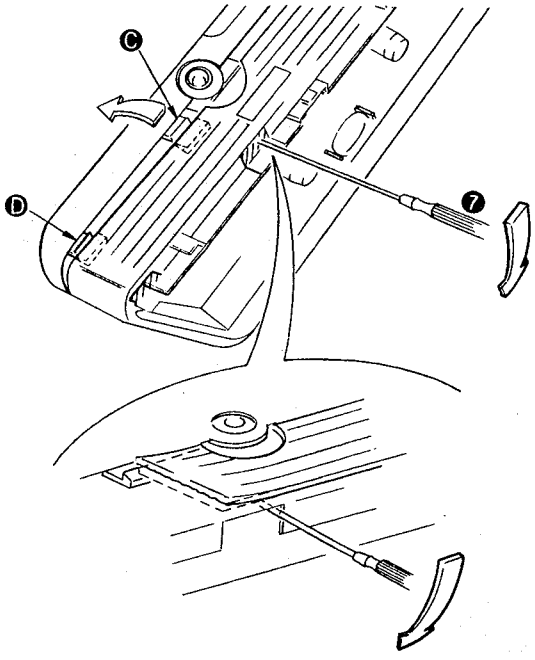


❹ Insert a precision screwdriver (width: 2.0mm) into the slit of front cabinet, lift the front cabinet as shown in the figure for making a clearance (Ⓥ).

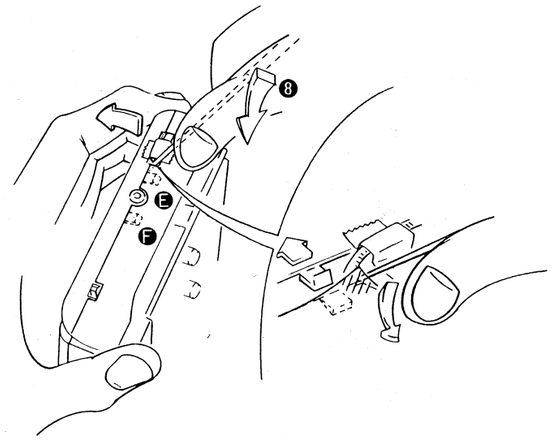
❺ Insert a wedge in the clearance.



❻ Insert a precision screwdriver (width: 2.0mm), and lift the front cabinet so that the claw Ⓑ comes off.

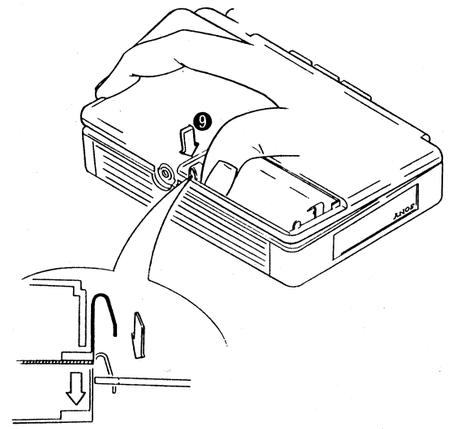


❼ In a similar way as procedure ❻ , uncouple the linkage of the claw Ⓒ and Ⓓ .



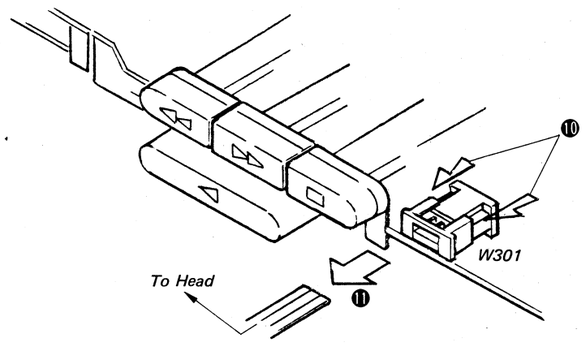
❽ Put a adhesive tape on the volume for protection. Insert a precision screwdriver (width: 1.4 mm) and lift the shaded portion, so that the claw Ⓔ and Ⓕ come off.

CAUTION: Be sure not to touch the volume knob, when inserting precision screwdriver.



❾ Press down the battery terminals in order to leave Mounted PCB in the rear cabinet, and then remove the rear cabinet.

[3] Head Flexible Board Removal



SECTION 2
MECHANICAL AND ELECTRICAL ADJUSTMENTS

MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured−alcohol−moistened swab :
   playback head　　pinch roller
   capstan　　idlers
   rubber belts
2. Demagnetize the playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

Torque	Meter Reading	Torque Meter
Foward	22−45g・cm (0.31−0.63oz・inch)	CQ-102C
Fast Forward	55−130g・cm (0.77−1.82oz・inch)	CQ-201B
Rewind	55−150g・cm (0.77−2.1oz・inch)	CQ-201B
Back Tension	1−2g・cm (0.014−0.028oz・inch)	CQ-102C

Tape Tension Measurement

Meter	Meter Reading
CQ-403A	more than 90g (1.26oz)

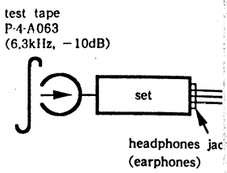
ELECTRICAL ADJUSTMENT

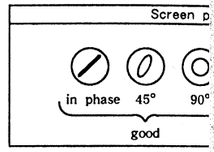
CASSETTE SECTION

Playback Head Phase Chec

Note :When replacing the head, phases.

Procedure :
Phase Check
Mode : playback





SECTION 2
D ELECTRICAL ADJUSTMENTS

red－alcohol－

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Torque Meter
CQ-102C
CQ-201B
CQ-201B
CQ-102C

26oz)

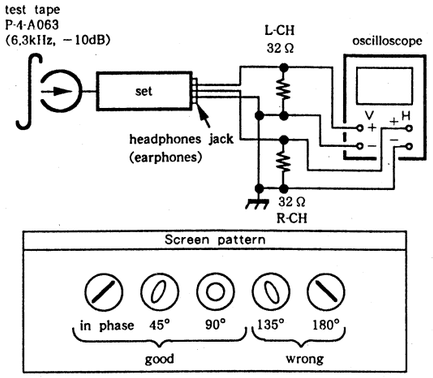
ELECTRICAL ADJUSTMENTS
CASSETTE SECTION

Playback Head Phase Check

Note :When replacing the head, check the both L-ch and R-ch phases.

Procedure :

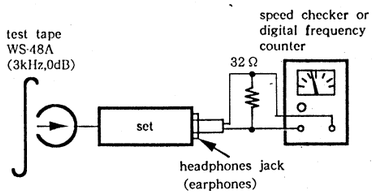
Phase Check
Mode : playback



Tape Speed Adjustment

Procedure :

Mode : playback

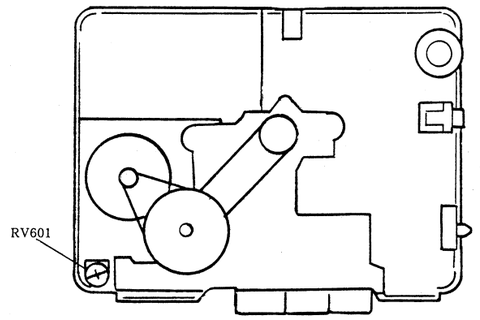


Specification :

speed checker	digital frequency counter (TAPE END)
±0.5%	2,990－3,015Hz

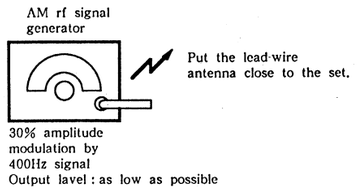
Frequency difference between the beginning and the end of the tape should be within±1.5% (±45Hz).

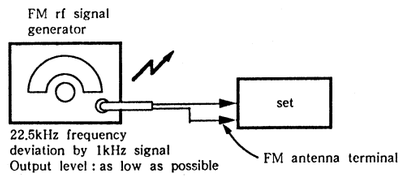
Adjustment Location



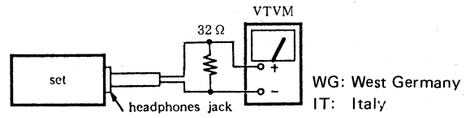
ELECTRICAL ADJUSTMENTS
TUNER SECTION

SUPPLIED VOLTAGE 2.5V





Note :
For adjustment of WM－AF23／AF29 SENS SW at DX.
For adjustment of WM－BF23 MODE SW at MONO.



WG: West Germany
IT: Italy

●Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

< > : CANADIAN model
( ) : WG model
[ ] : IT model
(( )) : WG, IT model

FM Frequency Coverage Adjustment

Pointer position	SG frequency	Adjustment part	Reading on VTVM
f minimum	87.0MHz (87.35MHz) [87.5MHz]	L3	maximum
f minimum	109.0MHz (107.8MHz) [108.0MHz]	CT3	

FM Tracking Adjustment

SG and set frequency	Adjustment part	Reading on VTVM
87.0MHz (87.35MHz) [87.5MHz]	L2	maximum
109.0MHz (107.8MHz) [108.0MHz]	CT2	

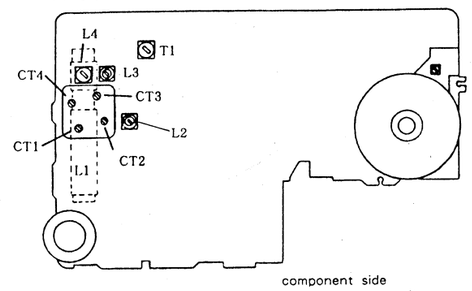
MW Frequency Coverage Adjustment

Pointer position	SG frequency	Adjustment part	Reading on VTVM
f minimum	520kHz ((526.5kHz))	L4	maximum
f minimum	1,650kHz <1,750kHz> ((1,606.5kHz))	CT4	

MW Tracking Adjustment

SG and set frequency	Adjustment part	Reading on VTVM
620kHz	L1	maximum
1,400kHz	CT1	

ADJUSTMENT LOCATION



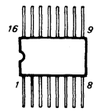
SECTION 3
DIAGRAMS

Note:

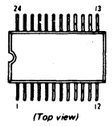
- ○—— : parts extracted from the component side.
- ■ : parts mounted on the conductor side.
- ● : Through hole.
- ▒▒ : Pattern on the side which is seen.
- ▒▒ : Pattern of the rear side.
- [ ] : Chip components extracted from the rear side.

● Semiconductor Lead Layouts

LA4570M



TA8122AF

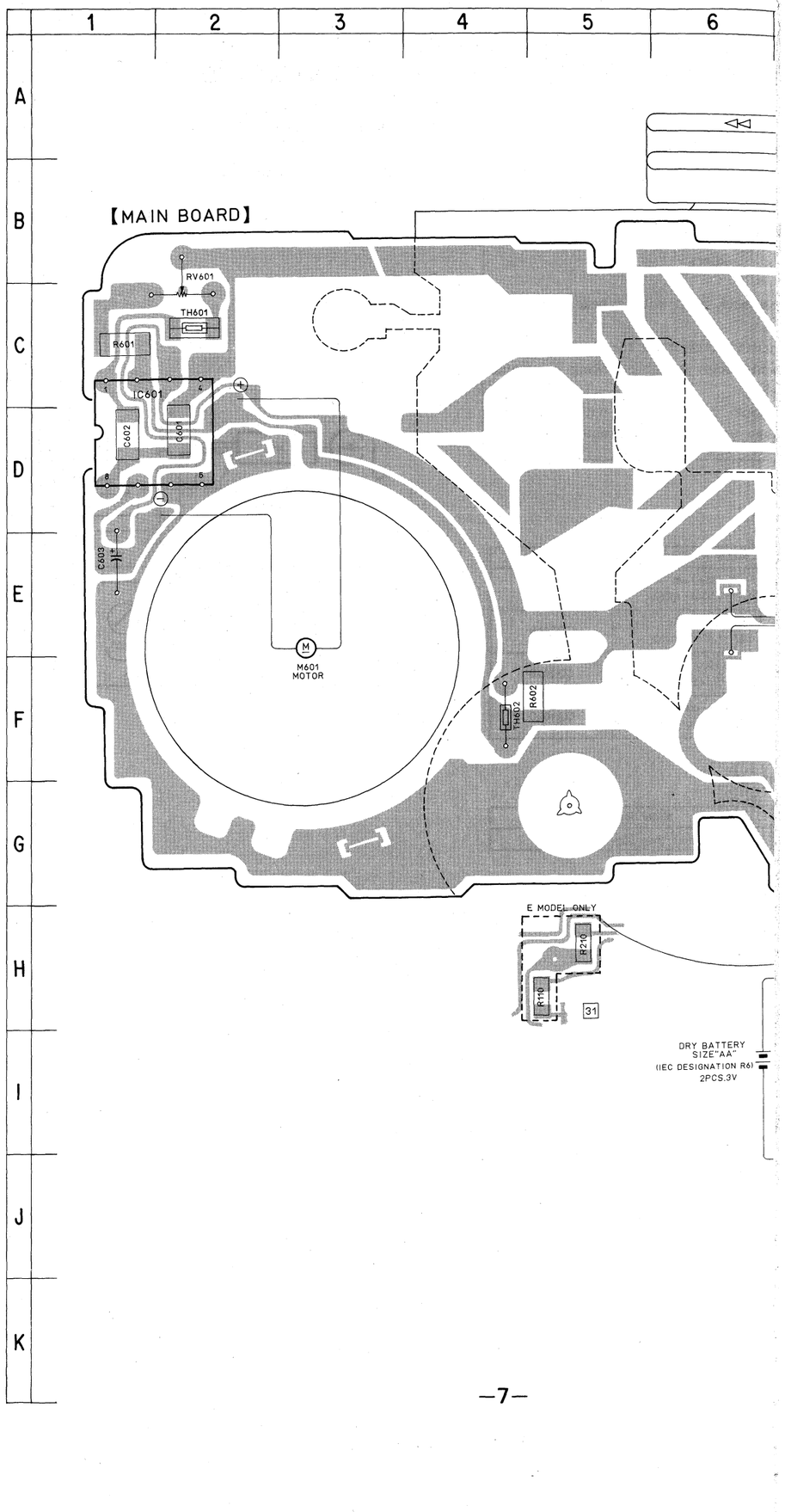


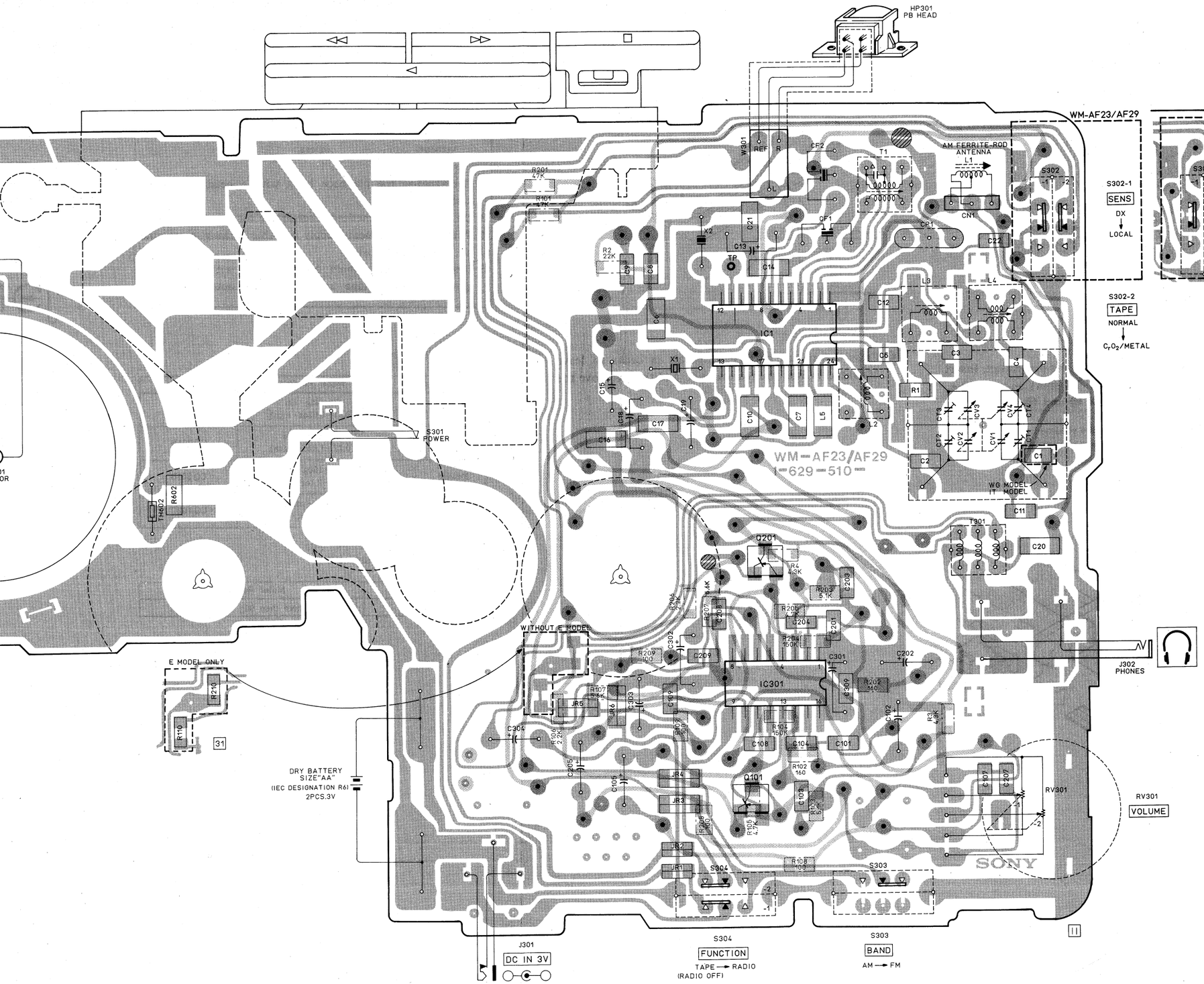
DTA114TK

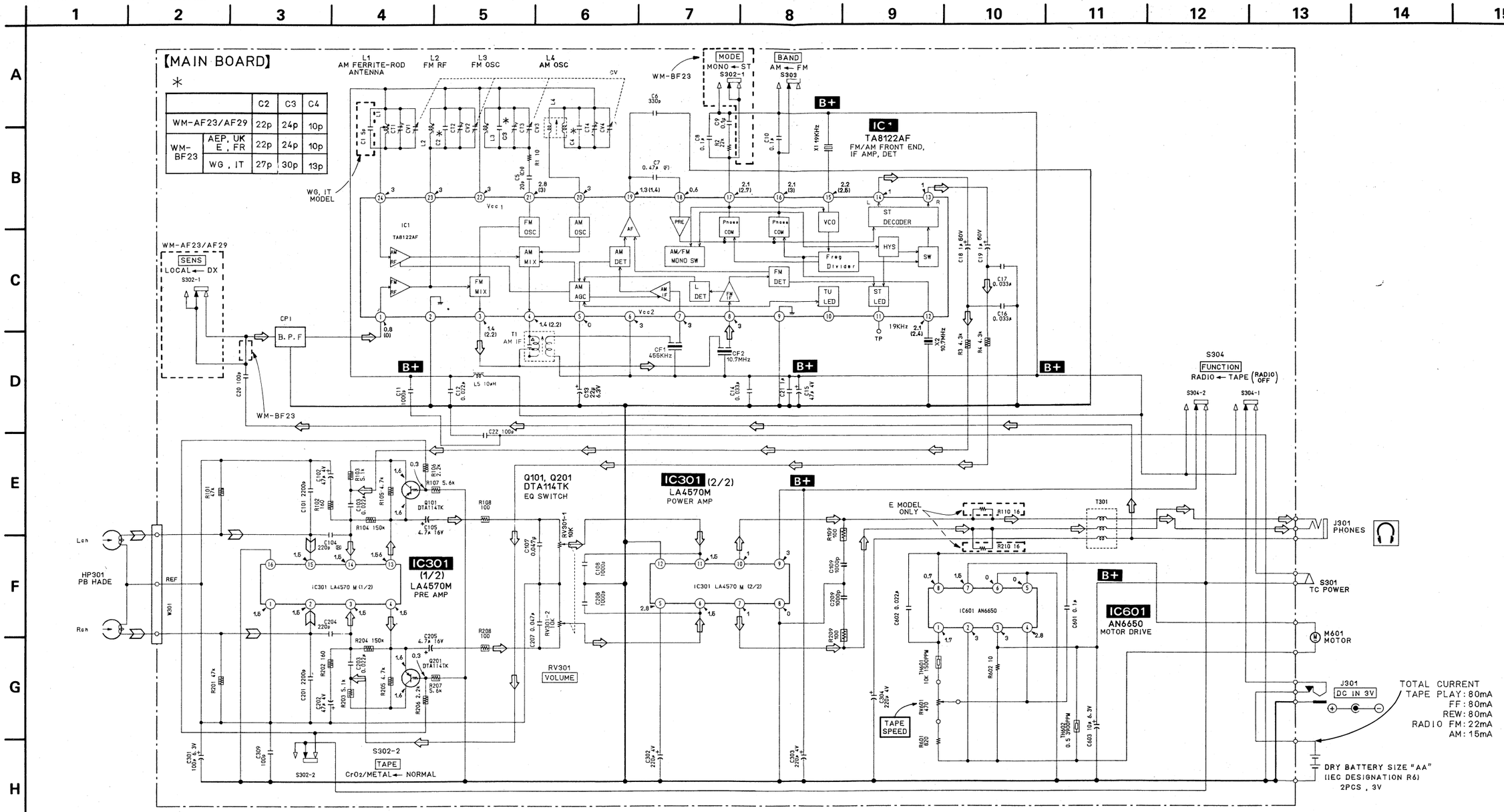
3-1. PRINTED WIRING BOARDS

● Semiconductor Location

Ref. No.	Location
IC1	D-11
IC301	H-11
IC601	D-1
Q101	I-10
Q201	F-11




HP301
PB HEAD
WM-AF23/AF29
WM-BF23
W301
REF
R
L
CF2
T1
AM FERRITE ROD ANTENNA
L1
CN1
CF1
S302
S302-1
SENS
DX
LOCAL
S302-2
TAPE
NORMAL
Cr O2/METAL
S302-1
MODE
ST
MONO
21
31
R201 47K
R401 47K
R2 22K
X2
C21
C13
TP
C14
C9
C8
C6
IC1
L3
L4
C12
C5
C3
C4
X1
C15
C16
C18
C17
C10
C7
L5
L2
R1
CV3
CV4
CV2
CV1
C2
C1
WG MODEL
IT MODEL
C11
T301
C20
WM-AF23/AF29
1-629-510-
S301
POWER
TH602
R602
Q201
R4 4.3K
R203 5.1K
C209
R206 4.7K
R207 3.6K
C208
R205 47K
C204
C201
R204 150K
C202
J302
PHONES
WITHOUT E MODEL
R209 100
C302
C209
C301
IC301
R202 150
R201 150
C303
C109
R106 2.2K
C304
C108
C104
C101
C102
R9 4.7K
C205
C105
JR5
JR6
JR4
JR3
JR2
JR1
Q101
R102 160
C103
R103 5.6K
R105 4.7K
R208 100
R108 100
C107
C207
RV301
RV301
VOLUME
E MODEL ONLY
R210
R110
31
DRY BATTERY
SIZE "AA"
(IEC DESIGNATION R6)
2PCS.3V
S304
FUNCTION
TAPE → RADIO
(RADIO OFF)
S303
BAND
AM → FM
J301
DC IN 3V
11
SONY



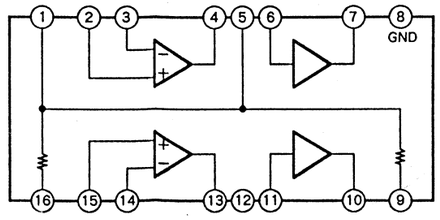
Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/8 W or less unless otherwise specified.
- △ : internal component.
- ⏛ : printed resistor.
- ▭ : adjustment for repair.
- Total current is measured with no cassette installed.
- Power voltage is dc 3 V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark: FWD, FM
  ( ): AM
- Voltages are taken with a VOM (input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : FM ⇦ : PB (DECK A)
- Switch

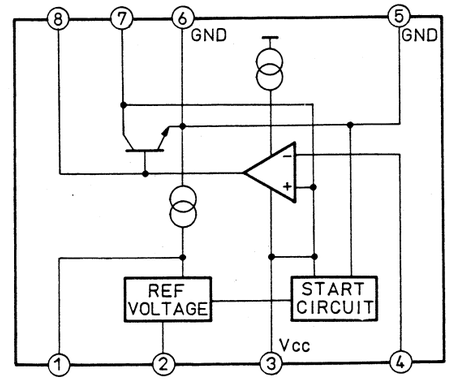
Ref. No.	Switch	Position
S301	POWER	OFF
S302-1	AF23/AF29: SENS	DX
	BF23: MODE	ST
S302-2	TAPE	NORMAL
S303	BAND	FM
S304	FUNCTION	TAPE

● IC BLOCK DIAGRAMS

IC301 LA4570M



IC601 AN6650



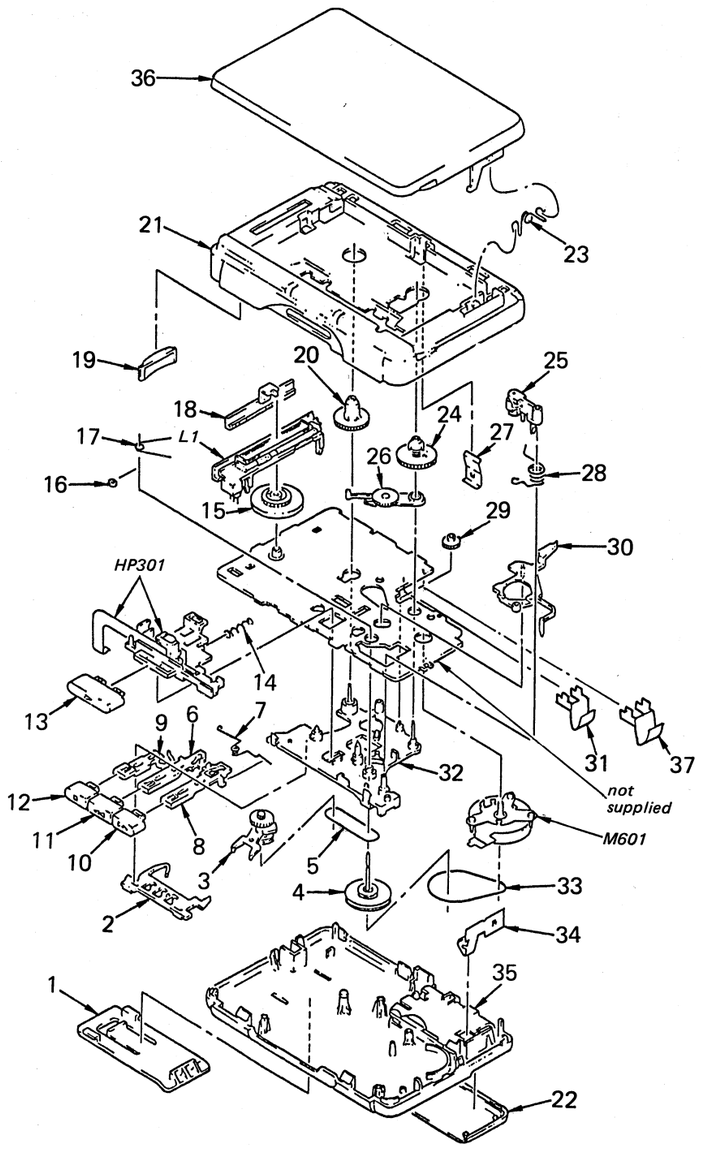
SECTION 4
EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
  Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ ↑
  Cabinet's Color Parts' Color

WG: West Germany
IT: Italy

(1)



No.	Part No.	Description	Remarks
1	3-346-518-01	CLIP, BELT	
2	3-346-522-01	PLATE, LOCK	
3	X-3346-503-1	GEAR ASSY, MIDWAY	
4	X-3346-505-1	WHEEL ASSY, CAPSTAN	
5	3-335-604-01	BELT, MIDWAY	
6	3-346-527-01	LEVER (REW)	
7	3-346-539-01	SPRING (FR)	
8	3-346-526-01	LEVER (FF)	
9	3-346-528-01	LEVER (STOP)	
10	3-346-513-01	(AF23:Canadian/BF23)...BUTTON (FF)	
	3-346-513-11	(AF29).....BUTTON (FF)	
11	3-346-514-01	(AF23:Canadian/BF23)...BUTTON (REW)	
	3-346-514-11	(AF29).....BUTTON (REW)	
12	3-346-515-01	(AF23:Canadian/BF23)...BUTTON (STOP)	
	3-346-515-11	(AF29).....BUTTON (STOP)	
13	3-346-512-01	(AF23:Canadian/BF23)...BUTTON (PLAY)	
	3-346-512-11	(AF29).....BUTTON (PLAY)	
14	3-335-605-01	SPRING, COMPRESSION	
15	3-346-502-01	KNOB (TU)	
16	3-343-358-01	RING, RETAINING	
17	3-346-538-01	SPRING (GROUND)	
18	3-346-503-01	POINTER	
19	3-346-504-01	COVER, KNOB	
20	3-346-525-01	GEAR (S REEL)	
21	3-351-501-01	(AF23:Canadian/AF29)...CABINET (FRONT)	
	3-351-501-11	(BF23:AEP,E,IT,UK).....CABINET (FRONT)	
	3-351-501-21	(BF23:WG).....CABINET (FRONT)	

No.	Part No.	Description	Remarks
22	3-346-517-01	LID, BATTERY CASE (BLACK)	
	3-346-517-61	(BF23)...LID, BATTERY CASE (RED)	
	3-346-517-71	(BF23)...LID, BATTERY CASE (BLU)	
23	3-346-509-01	SPRING	
24	X-3346-502-1	TABLE ASSY, T REEL	
25	X-3334-005-1	PINCH ROLLER ASSY	
26	X-3346-504-1	GEAR ASSY, PLAY	
27	3-346-516-01	SPRING	
28	3-335-608-01	SPRING	
29	3-334-089-01	GEAR, FF	
30	3-346-523-01	LEVER (SHUT-OFF)	
31	3-347-109-01	TERMINAL BOARD, PLUS	
32	X-3346-536-1	BASE ASSY (B), GUIDE	
33	3-335-603-11	BELT, CAPSTAN	
34	3-334-057-01	TERMINAL BOARD, RELAY	
35	3-351-503-01	CABINET (REAR)(BLACK)	
	3-351-503-11	(BF23)...CABINET (REAR)(RED)	
	3-351-503-21	(BF23)...CABINET (REAR)(BLU)	
36	X-3346-702-1	(AF23:Canadian)...HOLDER ASSY, CASSETTE	
	X-3346-706-1	(AF29).....HOLDER ASSY, CASSETTE	
	X-3346-711-1	(BF23:AEP,E,UK)...HOLDER ASSY, CASSETTE (BLACK)	
	X-3346-712-1	(BF23:AEP,E,UK)...HOLDER ASSY, CASSETTE (RED)	
	X-3346-713-1	(BF23:AEP,E,UK)...HOLDER ASSY, CASSETTE (BLU)	
	X-3346-716-1	(BF23:WG,IT).....HOLDER ASSY, CASSETTE (BLACK)	
	X-3346-717-1	(BF23:WG,IT).....HOLDER ASSY, CASSETTE (RED)	
	X-3346-718-1	(BF23:WG,IT).....HOLDER ASSY, CASSETTE (BLU)	
37	3-341-794-01	TERMINAL BOARD, MINUS	
HP301	A-3108-292-A	PC BOARD ASSY, HEAD	
M601	1-541-650-21	MOTOR	

SECTION 5
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

WG: West Germany
IT: Italy

Ref.No.	Part No.	Description			
C1	1-163-088-91	(BF23:WG,IT) ...CERAMIC CHIP	5PF	0.25PF	25V
C2	1-163-101-00	(WITHOUT WM-BF23:WG,IT) ...CERAMIC CHIP	22PF	5%	50V
C2	1-163-103-91	(WM-BF23:WG,IT) ...CERAMIC CHIP	27PF	5%	50V
C3	1-163-102-00	(WITHOUT WM-BF23:WG,IT) ...CERAMIC CHIP	24PF	5%	50V
C3	1-163-364-91	(WM-BF23:WG,IT) ...CERAMIC CHIP	30PF	5%	50V
C4	1-163-093-00	(WITHOUT WM-BF23:WG,IT) ...CERAMIC CHIP	10PF	5%	50V
C4	1-163-356-91	(WM-BF23:WG,IT) ...CERAMIC CHIP	13PF	5%	50V
C5	1-163-100-00	CERAMIC CHIP	20PF	5%	50V
C6	1-163-193-00	CERAMIC CHIP	330PF	10%	50V
C7	1-162-637-11	CERAMIC CHIP	0.47MF		16V
C8	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C9	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C10	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C11	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C12	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C13	1-126-153-11	ELECT	22MF	20%	6.3V
C14	1-163-078-11	CERAMIC CHIP	0.033MF	10%	25V
C15	1-124-432-00	ELECT	47MF	20%	4V
C16	1-163-078-11	CERAMIC CHIP	0.033MF	10%	25V
C17	1-163-078-11	CERAMIC CHIP	0.033MF	10%	25V
C18	1-126-160-11	ELECT	1MF	20%	50V
C19	1-126-160-11	ELECT	1MF	20%	50V
C20	1-163-181-00	CERAMIC CHIP	100PF	5%	50V
C21	1-162-611-00	CERAMIC CHIP	1MF		25V
C22	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C101	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C102	1-124-432-00	ELECT	47MF	20%	4V
C103	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C104	1-163-125-00	CERAMIC CHIP	220PF	10%	50V
C105	1-126-094-11	ELECT	4.7MF	20%	16V
C107	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C108	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C109	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C201	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C202	1-124-432-00	ELECT	47MF	20%	4V
C203	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C204	1-163-125-00	CERAMIC CHIP	220PF	10%	50V
C205	1-126-094-11	ELECT	4.7MF	20%	16V
C207	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C208	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C209	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C301	1-124-225-00	ELECT	100MF	20%	6.3V
C302	1-124-434-00	ELECT	220MF	20%	4V
C303	1-124-434-00	ELECT	220MF	20%	4V
C304	1-124-434-00	ELECT	220MF	20%	4V
C309	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C601	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C602	1-163-063-00	CERAMIC CHIP	0.022MF	10%	50V
C603	1-126-157-11	ELECT	10MF	20%	16V
CF1	1-527-870-00	(WITHOUT WM-BF23:UK)...FILTER(10.7MHz)			
CF1	1-567-129-11	(WM-BF23:UK)...FILTER CERAMIC			
CF2	1-577-344-71	FILTER, CERAMIC (455kHz)			
CN1	*1-565-285-11	HOUSING, CONNECTOR(PC BAORD)3P			
CP1	1-236-022-11	FILTER, BAND PASS			
CV1	1-151-629-11	CAP, VAR, POLYETHYLENE(WITH CT1-4,CV1-4)			
HP301	A-3108-292-A	PC BOARD ASSY, HEAD			
IC1	8-759-230-39	IC TA8122AF			
IC301	8-759-820-19	IC LA4570M			
IC601	8-759-403-83	IC AN6650			
J301	1-568-228-11	JACK, EXTERNAL POWER (DC IN 3V)			
J302	1-565-287-11	JACK (PHONES)			
JR1	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR2	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR3	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR4	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR5	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR6	1-216-296-00	METAL GLAZE	0	5%	1/8W
L1	1-402-412-11	ANTENNA, FERRITE-ROD			
L2	1-459-955-11	(WITHOUT WM-BF23:WG,IT) ..COIL(WITH CORE)(FM RF)			
L2	1-459-956-11	(WM-BF23:WG,IT)..COIL(WITH CORE)(FM RF)			
L3	1-459-953-11	(WITHOUT WM-BF23:WG,IT) ..COIL(WITH CORE)(FM OSC)			
L3	1-459-954-11	(WM-BF23:WG,IT)..COIL(WITH CORE)(FM OSC)			
L4	1-406-330-21	COIL (OSC)(AM)			
L5	1-410-204-31	INDUCTOR CHIP	10UH		
M601	1-541-650-21	MOTOR			

Ref.No.	Part No.	Description			
Q101	8-729-900-51	TRANSISTOR DTA114TK			
Q201	8-729-900-51	TRANSISTOR DTA114TK			
R1	1-216-001-00	METAL GLAZE	10	5%	1/10W
R2	1-249-433-11	CARBON	22K	5%	1/32W
R3	1-215-436-00	CARBON	4.3K	5%	1/32W
R4	1-215-436-00	CARBON	4.3K	5%	1/32W
R101	1-249-437-11	CARBON	47K	5%	1/32W
R102	1-000-030-11	CARBON	160	5%	1/32W
R103	1-215-438-00	CARBON	5.1K	5%	1/32W
R104	1-215-473-00	CARBON	150K	5%	1/32W
R105	1-249-425-11	CARBON	4.7K	5%	1/32W
R106	1-249-421-11	CARBON	2.2K	5%	1/32W
R107	1-249-426-11	CARBON	5.6K	5%	1/32W
R108	1-249-405-11	CARBON	100	5%	1/32W
R109	1-249-405-11	CARBON	100	5%	1/32W
R110	1-216-006-91	(WM-BF23:E)...METAL GLAZE	16	5%	1/10W
R201	1-249-437-11	CARBON	47K	5%	1/32W
R202	1-000-030-11	CARBON	160	5%	1/32W
R203	1-215-438-00	CARBON	5.1K	5%	1/32W
R204	1-215-473-00	CARBON	150K	5%	1/32W
R205	1-249-425-11	CARBON	4.7K	5%	1/32W
R206	1-249-421-11	CARBON	2.2K	5%	1/32W
R207	1-249-426-11	CARBON	5.6K	5%	1/32W
R208	1-249-405-11	CARBON	100	5%	1/32W
R209	1-249-405-11	CARBON	100	5%	1/32W
R210	1-216-006-91	(WM-BF23:E)...METAL GLAZE	16	5%	1/10W
R601	1-216-196-00	METAL GLAZE	820	5%	1/8W
R602	1-216-150-00	METAL GLAZE	10	5%	1/8W
RV301	1-238-072-11	RES, VAR, CABON 10K/10K (VOLUME)			
RV601	1-238-011-11	RES, ADJ, CARBON 470 (TAPE SPEED)			
S301	1-570-549-11	SWITCH, LEAF (POWER)			
S302	1-571-478-11	SWITCH, SLIDE (SENS/MODE-TAPE)			
S303	1-571-478-11	SWITCH, SLIDE (BAND)			
S304	1-571-478-11	SWITCH, SLIDE (FUNCTION)			
T1	1-404-791-11	(WITHOUT WM-BF23:UK) ...TRANSFORMER, IF (AM)			
T1	1-404-792-11	(WM-BF23:UK)...TRANSFORMER, IF (AM)			
T301	1-409-444-11	COIL, TRAP			
TH601	1-808-664-21	THERMISTOR, POSITIVE			
TH602	1-807-489-41	THERMISTOR (POSITIVE)			
W301	*1-565-288-11	HOUSING, CONNECTOR 3P			
X1	1-577-091-11	OSILLATOR, CERAMIC (19kHz)			
X2	1-577-344-71	FILTER, CERAMIC (10.7MHz)			

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

ACCESSORY & PACKING MATERIAL

	1-528-239-21	(AF29)...BATTERY, STORAGE, LEAD (BP-700)
⚠	1-528-238-21	(AF29:US).....BATTERY CHARGER
⚠	1-528-263-11	(AF29:Canadian)...BATTERY CHARGER
	3-351-508-01	TUBE, PROTECTION
	3-786-982-11	(AF23/AF29:Canadian,BF23) ...MANUAL, INSTRUCTION
	3-786-982-21	(AF29:US).....MANUAL, INSTRUCTION
	8-952-350-90	(WM-BF23:E)...EARPHONE MDR-E454 SET
	8-952-447-90	(WITHOUT WM-BF23:E) ...EARPHONE MDR-006L SET

9-953-598-11

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Audio Group

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